

## REMARKS/ARGUMENTS

By this Amendment, no claims have been amended, no claims have been canceled, and no new claims have been added to the application. Accordingly, claims 3-7, 9, 10, 12 and 19-33 remain pending in the application. No new matter has been added.

In the prior Office Action, the Examiner withdrew the claim rejections previously asserted in the Office Action mailed June 27, 2008. However, the Examiner rejected claims 3-5, 7, 9, 10, 12 and 19-33 on new grounds. Specifically, the Examiner rejected such claims under 35 U.S.C. §103(a) as being unpatentable over Delson, U.S. Pat. 5,513,654.

Delson discloses a condom having high coefficient of friction skin-contacting inner surface and an outer surface that has anti-blocking or release properties (see Abstract). In a discussion of prior art condom manufacturing processes, Delson notes at col. 4, line 49-56 that:

Traditionally, an anti-blocking, friction-reducing material or "dressing agent" (a dusting powder or lubricant or a combination thereof) is applied to both the exterior and interior surfaces of the sheath prior to or during removal from the core or prior to rolling up of the sheath. Typical dusting agents include talc, calcium carbonate, silica, lycopodium, corn or potato starch, or the like, or combinations thereof.

In contrast to the prior art, Delson teaches that the outer surface only of the condom should be coated with a liquid-state release material such as a curable silicone composition.

Notwithstanding that Delson teaches away from the use of traditional dusting powders in condom manufacture, the Examiner contends that:

Delson thus discloses a condom comprising a finishing powder which comprises a particulate, substantially water-insoluble (since calcium carbonate is substantially insoluble in water, see column 4, lines 42-56), inorganic compound having substantially spherical particle morphology (since a powder is substantially spherical), wherein the finishing powder is calcium carbonate (column 4, lines 42-56) which has a water solubility of

less than 0.05 g per 100 g of water (since calcium carbonate is not soluble in water) and the powder is non-immobilized (column 4, lines 42-56).

There are at least two problems with the Examiner's contentions. First, powder particles are not, by definition, substantially spherical. And second, the carbonates conventionally used in condom manufacture in particular are not substantially spherical.

Applicant has attached copies of seven dictionary definitions for the word "powder". None of the definitions defines a "powder" as being formed of substantially spherical particles. On the contrary, a "powder" consists of fine particles without any specification as to the morphology of the particles. For example, Chambers Concise Dictionary defines a powder as "any substance in the form of fine, dust-like particles." (Ex. 1) Similarly, the Larousse Dictionary of Science and Technology defines a powder as "discrete particles of dry material in the range 0.1 - 1000  $\mu\text{m}$ ." (Ex. 2) As noted in the following table, various on-line dictionaries also set forth similar definitions for the noun "powder":

#### **On-Line Dictionary Definitions For The Noun "Powder"**

<u>Source</u>	<u>Definition</u>
dictionary.babylon.com (Ex. 3)	Finely ground material, material pulverized to the consistency of dust.
www.merriam-webster.com (Ex. 4)	Matter in a finely divided state; particulate matter. A preparation in the form of fine particles especially for medicinal or cosmetic use.
ardictionary.com (Ex. 5)	The fine particles to which any dry substance is reduced by pounding, grinding, or triturating, or into which it falls by decay; dust.
www.thefreedictionary.com (Ex. 6)	A substance consisting of ground, pulverized, or otherwise finely dispersed solid particles. Any of various preparations in the form of powder, as certain cosmetics and medicines.
www.yourdictionary.com (Ex. 7)	Any dry substance in the form of very fine, dust-like particles, produced by crushing, grinding, etc.

None of the foregoing dictionary references specify that a "powder" must have a substantially spherical particle morphology. In fact, powders can have any morphology. Substantially spherical particle morphologies are therefore not an inherent or required characteristic of a "powder."

The reference in Delson to "calcium carbonate" was in the context of traditional dusting powders. Thus, a person having ordinary skill in the art would recognize this as a reference to standard calcium carbonate, which was commonly used as a condom dusting powder at the time of the present invention.

The instant specification teaches at page 2, lines 18-20 that "the carbonates [calcium carbonate and magnesium carbonate] used up till now have been produced by standard manufacturing processes and these carbonates have irregular or spicula particle morphology."). Fig. 2 of the present application is a micrograph of standard basic magnesium carbonate, and such figure clearly shows that standard basic magnesium carbonate does not have a substantially spherical particle morphology. On the contrary, it has an irregular, non-spherical particle morphology.

The Handbook of Pharmaceutical Excipients (Ex. 8) includes several micrographs that demonstrate that calcium carbonate powders are generally irregular, rough and spicula: they are not substantially spherical.

Applicant also notes that Table 1 of Kang et al. (Journal of Applied Toxicology, Vol. 12(6) (1992), pgs. 443-449), which was relied upon by the Examiner in prior Office Actions, identifies a variety of dusting powders and states that such powders have a variety of particle morphologies including irregular, rough rounded, cuboid and so on. The Kang et al. reference describes calcium carbonate powders as being "single cuboid crystals and aggregates." This is additional evidence that refutes the Examiner's contention that calcium carbonate has a substantially spherical morphology.

Claim 12 of the present application claims:

A condom comprising a finishing powder which comprises a particulate, substantially water-insoluble, inorganic compound having an average circularity factor of 15 or below, wherein the circularity factor for each particle used to generate the average is measured according to the formula:

$$\text{circularity factor} = p^2/A$$

where p is the perimeter of a 2-D image of the particle and A is the area of the 2-D image of the particle.

The prior art simply does not teach a condom as claimed. Applicant recognized that use of standard condom dusting powders (including the standard calcium carbonate-based dusting powders mentioned in Delson) leads to problems such as poor reduction of friction and impedence of lubricant migration. Delson does not suggest that these problems can be overcome through the use of a particulate, substantially water-insoluble, inorganic compound having an average circularity factor of 15 or below as measured in accordance with the claimed formula. There is no teaching in Delson or in any prior art of record that the morphology of the particles in dusting powders is of any importance whatsoever. Thus, there is no teaching or suggestion in Delson that the use of particles having a substantially spherical particle morphology is associated with any particular benefit. As noted above, Delson simply refers to the use of calcium carbonate dusting powders, with no further qualification as to the nature of the particles, and therefore the skilled person would understand Delson to refer to standard calcium carbonate powders, which were commonly in use at the time. Delson therefore reflects the general view in the field prior to applicant's invention that standard calcium carbonate powders were perfectly acceptable for use as condom dusting powders, and that advantages could only be obtained through the use of a liquid-state release agent such as taught by Delson. Applicant's invention, which specifies the use of substantially spherical inorganic particles, is therefore clearly not obvious in view of Delson.

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge the same to Deposit Account No. 18-0160, Order No. AAT-15784.

Application No. 10/522,634  
Amendment dated March 25, 2009  
Reply to Office action of December 30, 2008

Respectfully submitted,

RANKIN, HILL & CLARK LLP

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Preface

Using the dictionary

Model of dictionary

Abbreviations used

Pronunciation guide

Chambers Concise

Supplement

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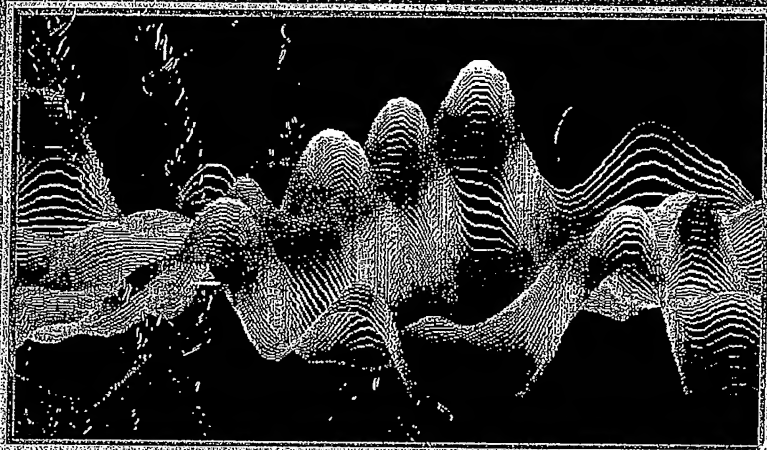


has an influential role in international affairs • *superpower*.  
9 a person or group exercising control or influence. 10  
colloq a great deal • *The rest did her a power of good*. 11  
(often in compounds) any form of energy, especially when  
used as the driving force for a machine • *nuclear power*. 12  
*maths* a less technical term for an EXPONENT (sense 3). 13  
physics the rate of doing work or converting energy from  
one form into another. 14 mechanical or electrical energy  
as distinct from manual effort. 15 *optics* a measure of the  
extent to which a lens, optical instrument or curved mirror  
can deviate light rays and so magnify an image of an object.  
16 in the traditional medieval hierarchy of nine ranks of  
angels: an angel of the sixth rank • *as adj* • *power tools* • *v*  
(powered, powering) 1 (also in compounds) to supply  
something with power • *wind-powered*. 2 *tr & intr*, colloq to  
move or cause something to move with great force, energy  
or speed. [13c: from French *puer*, from Latin *posse* to be able]  
♦ in power elected; holding office • *when Labour is in*  
*power* the powers that be the people who are in control  
or in authority.  
♦ *power something up* to recharge its power supply  
(especially that of a laptop computer) by attaching it to the  
main electricity supply.  
**power base** ▷ *n* something or someone seen as the origin  
or foundation of authority, backing, support, etc, especially  
in politics, international relations, business, etc. [1960s]  
**power block** ▷ *n* a politically important and powerful  
group or body, especially a group of allied states.  
**powerboat** ▷ *n* a boat fitted with a high-powered and  
finely tuned inboard or outboard engine.  
**power breakfast** see POWER LUNCH  
**power broker** ▷ *n* someone who has great influence, eg in  
politics, especially when they use this influence to sway  
policies, etc in their own or their party's favour. [1960s]  
♦ *power-broking* *n*, *adj*.  
**power cut** ▷ *n* a temporary break or reduction in an  
electricity supply.  
**power dive** ▷ *n* a steep dive made by an aeroplane, with its  
engines providing thrust. ▷ *v* (power-dive) 1 *intr* said of an  
aircraft: to perform a power dive. 2 *tr & intr* to make (an  
aircraft) perform a power dive. [1930s]  
**power dressing** ▷ *n* the wearing, by businesswomen, of  
severely tailored suits and dresses, intended to convey  
professionalism and assertiveness. [1980s]  
**powerful** ▷ *adj* 1 having great power, strength or vigour. 2  
very effective or efficient • *a powerful argument*. ▷ *adv*, *dialect*  
extremely • *June was powerful hot*.  
♦ *powerfully* *adv* • *powerfulness* *n*.  
**powerhouse** ▷ *n* 1 a power station. 2 colloq a forceful or  
vigorous person.  
**powerless** ▷ *adj* 1 deprived of power or authority. 2  
completely unable (*usu* to do something) • *I was powerless to*  
*help*.  
♦ *powerlessly* *adv* • *powerlessness* *n*.  
**power line** ▷ *n* a conductor that carries electricity,  
especially one of several supported by pylons. [19c]  
**power lunch** or **power breakfast** ▷ *n* a high-level  
business discussion held over lunch or breakfast.  
**power of attorney** ▷ *n* the right to act for another person  
in legal and business matters.  
**power pack** ▷ *n* a device for adjusting the voltage of a  
power source or battery to the voltage required by a  
particular electrical device.  
**power plant** ▷ *n* 1 an industrial plant for generating  
electrical energy from some other form of energy. 2 the  
engine and other equipment that supplies power to a motor  
vehicle, aeroplane, etc.  
power plant *n* a 1 many strong attacking ship designed to

into (an item of clothing which fits very  
tightly)  
it rains but it pours things, especially pieces of  
bad luck, etc, seldom come along unaccompanied by  
other bad luck, etc • *your cold water on something* to be  
a disappointing or deprecating about (an idea, scheme, etc).  
colloq to say something to be contemptuous about it.  
colloq to say something out to give vent to it without  
regard for other people's feelings.  
[19c: from French *puer*, from Latin *posse* to be able]  
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engine and other equipment that supplies power to a motor  
vehicle, aeroplane, etc.  
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## Conten

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Preface  
Acknowledge  
Contributors  
Subject categ  
Abbreviations

## The Dictiona

Appendices  
ISO paper size  
USA equivalence  
Classification  
Classification  
Geological co  
Palaeozoic  
Mesozoic  
Cenozoic  
Constellation:  
The Sun  
Planets  
Planetary satellite  
The Periodic  
Properties of  
Subatomic particles  
Graphical symbols  
Mathematical  
Units of measurement  
SI derived  
Conversion  
SI prefixes  
SI conversion  
Physical constants  
Greek alphabet

## pot furnaces

bottom, which is placed in a tank furnace so that it reaches below the glass level. It protects a worker gathering glass on a pipe or iron from furnace gases; also, the glass here is somewhat cooler than that in the main part of the furnace, where melting is taking place. Also *boot, hood*.

**pot furnaces (Glass)** Furnaces in which are set a number of *pots*. They may be: (1) direct-fired from below; (2) gas-fired from below through a central opening in the circular siege, using the recuperative principle; (3) fired through ports in the siege or in the walls, the waste gases escaping through similar openings. In the last-named process, which holds generally for non-circular furnaces, the regenerative principle may be used.

**Potter construction (ElecEng)** A graphical construction for determining the reactance, armature reaction, and regulation of a synchronous generator from the open-circuit, short-circuit and zero-power factor characteristics.

**Potter reactance (ElecEng)** The reactance of a synchronous machine as determined by the Potter construction.

**pot magnet (ElecEng)** One embracing a coil or similar space, excited by current in the coil or a permanent magnet in the central core. Main use is with a circular gap at an end of the core for a moving coil. Miniature split-sintered pot magnets are also used to contain high-frequency coils.

**potometer (Bot)** An apparatus to measure the rate of uptake of water by a plant or a detached shoot etc and often, thus, indirectly to estimate transpiration.

**pot still (Chem)** A still consisting of a boiling vessel with condenser attached. The use of a fractionating column is optional. Used for batch distillation.

**potstone (Min)** A massive variety of steatite, more or less impure.

**Potter-Bucky grid (Radiol)** Type of lead grid designed to avoid exposure of film to scattered X-radiation in diagnostic radiography. Mechanical oscillation of the grid eliminates reproduction of the grid pattern on the radiograph.

**potter's clay (Geol)** See ball clay.

**Pott's disease (Med)** *Spinal caries*. Tuberculous infection of the spinal column.

**Pott's fracture (Med)** Fracture dislocation of the ankle-joint, the lower parts of the tibia and the fibula being broken.

**potty-putty (Eng)** TN for silicone polymer. Also *bouncing putty*. See viscoelasticity.

**pouch (Zool)** Any sac-like or pouch-like structure; as the abdominal brood pouch of marsupials.

**poughite (Min)** A hydrated sulphate and tellurite of iron, crystallizing in the orthorhombic system.

**poultice corrosion (Eng)** That which occurs in pockets or on ledges particularly in cars subject to salt spray and dirt.

**pound (Build)** See pond.

**pound (Genl)** The unit of mass in the old UK system of units established by the Weights and Measures Act (1856), and until 1963 defined as the mass of the Imperial Standard Pound, a platinum cylinder kept at the Board of Trade. In 1963 it was redefined as 0.45359237 kg. The US pound is defined as 0.4535924277 kg.

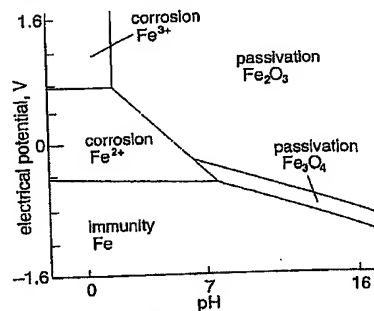
**poundal (Phys)** Unit of force in the foot-pound-second system. The force that produces an acceleration of 1 ft s<sup>-2</sup> on a mass of 1 pound. Symbol pdl. 32.2 pdl = 1 lbf (lb wt); 1 pdl = 0.138255 N.

**pound-calorie (Genl)** See centigrade heat unit.

**pounding (Ships)** The heavy falling of the fore end of the ship into the sea when it has been lifted clear of the water by wave action. Also striking the ground under the ship

## powder-post beetle attack

chemistry and the prediction of metallic corrosion behaviour. The example in the figure represents the relationship for the system iron-water-air at 25°C.



Pourbaix diagram

**pouring basin (Eng)** Part of the passage system for bringing molten metal to the mould cavity in metal casting. It is provided on large moulds, next to the sprue hole top, to simplify pouring and to prevent slag from entering the mould. See fig. at moulding.

**pour point (Chem, MinExt)** The lowest temperature at which a petroleum-based oil, chilled under test conditions, will flow.

**powder (Eng, PowderTech)** Discrete particles of dry material in the range 0.1–1000 µm.

**powder core (ElecEng)** Core of powdered magnetic material with an electrically insulating binding material to minimize the effects of eddy currents which are used for high-frequency transformers and inductors with low loss in power.

**powder density (Plastics)** The mass in grams of 1 cm<sup>3</sup> of loose moulding powder.

**powderless etching (Print)** The etching of line blocks in one stage without recourse to dragon's blood between a series of etches, using specially designed etching baths with several features including close temperature regulation, planetary movement of the plate, and controlled application of the etching fluid. A measured quantity of special inhibitor is added to the etchant and this forms a protecting film over the metal to control the progress of the etch, by protecting the sides of the lines from undercutting, and stopping the etch when a suitable depth is reached. Originally introduced for line work only, on magnesium alloy, it has been adapted for half-tone and is particularly suitable for combined work, using micrograin zinc or copper.

**powder metallurgy (Eng)** The working of metals and certain carbides in powder form by pressing and sintering. Used to produce self-lubricated bearings, tungsten filaments and shaped cutting inserts (carbide). See cemented carbides.

**powder method (Min)** See powder photography.

**powder photography (Min)** Method of identification of minerals or crystals, in which the powdered preparation, mounted vertically in a special camera in which it rotates, is subjected to a suitably modified beam of X-rays. The pattern, characterized by a set of concentric rings produced by rays diffracted at the Bragg angle relative to the incident beam, is diffracted on to a surrounding strip of film to give positive identification. Also *powder method*.

**powder porosity (PowderTech)** The ratio of the volume of voids due to the volume of open pores to the total

## powder technology

**powder technology (G)** production and handling analysis and the proper **powdery mildew (Bot)** eg cereals and apples, order Erysiphales.

**power (Maths)** An exponential numeral placed above quantity, which indicates quantity is multiplied

**power (Phys)** Rate of second and expressed. The foot-pound-second which is a rate of work horsepower is equivalent

**power (Stats)** The correlation of the second rejection of the status favour of a specified

**power amplification** a given signal to a level or circuits, the ratio expressed in decibels.

**power amplifier (Elec)** required power output linear distortion, gain cases, the voltage gain. Also *power unit*.

**power-assisted control** wherein the pilot is acting hydraulic jack

**power-assisted steering** hydraulic ram controls assists the steering hydraulic pump drive a valve which responds

**power breeder (Nuc)** designed to produce

**power budget (Telec)** the planning of a communication such factors ageing of components required to achieve a lifetime of the line

**power circuit (ElecE)** electrical installation other than fixed high

**power coefficient (i)** a reactor with increasing reactor, due to temperature coefficient temperatures through amount.

**power component** a power level of a non-absorbing rod control may be a fuel rod or

**power controls (Ae)** where movement of power system, control electrohydraulic or duplicated (power rams) and both ci

**power density (Nuc)** unit volume of a reactor





Translation Dictionary Tools

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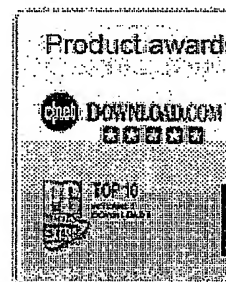
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**Definition of Powder****Babylon English-English**

v. grind to dust, pulverize into very fine particles; apply powder, dust with powder

n. finely ground material, material pulverized to the consistency of dust

Powder

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Powder Definition from [Language, Idioms & Slang](#) Dictionaries & Glossaries**Webster's Revised Unabridged Dictionary (1913)**

(v. t.)

To sprinkle with salt; to corn, as meat.

(v. t.)

To sprinkle with powder, or as with powder; to be sprinkle; as, to powder the hair.



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**Language Dictionary**

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Hebrew Dictionary

(v. t.)

To reduce to fine particles; to pound, grind, or rub into a powder; to comminute; to pulverize; to triturate.

(v. i.)

To use powder on the hair or skin; as, she paints and powders.

(v. i.)

To be reduced to powder; to become like powder; as, some salts powder easily.

(n.)

The fine particles to which any dry substance is reduced by pounding, grinding, or triturating, or into which it falls by decay; dust.

(n.)

An explosive mixture used in gunnery, blasting, etc.; gunpowder. See Gunpowder.

# WordNet 2.0

## Noun

1. a solid substance in the form of tiny loose particles; a solid that has been pulverized  
(synonym) pulverization, pulverisation  
(hypernym) solid  
(derivation) powderize, powderise, pulverize, pulverise
2. a mixture of potassium nitrate, charcoal, and sulfur in a 75:15:10 ratio which is used in gunnery, time fuses, and fireworks  
(synonym) gunpowder  
(hypernym) explosive
3. any of various cosmetic or medical preparations dispensed in the form of a powder  
(hypernym) toiletry, toilet article, toiletries  
(hyponym) araroba, Goa powder, chrysarobin

## Verb

1. apply powder to; "She powdered her nose"; "The King wears a powdered wig"  
(hypernym) make up  
(hyponym) talc
2. make into a powder by breaking up or cause to become dust; "pulverize the grains"  
(synonym) powderize, powderise, pulverize, pulverise  
(hypernym) disintegrate  
(verb-group) powderize, pulverize, pulverise, powderise  
(derivation) pulverization, pulverisation

## Australian Slang

keep out of here

1. (of a female) visit the ladies' room or toilet; 2. (*jocular*) snort cocaine

weak or effeminate male

depart; disappear

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## ❖ hEnglish - advanced version

**powder**

you can click anywhere, but just don't click here.

**powder**

\pow"der\ (?), n. [oe. poudre, pouldre, f. poudre, of. also poldre, puldre, l. pulvis, pulveris: cf. pollen fine flour, mill dust, e. pollen. cf. polverine, pulverize.]

1. the fine particles to which any dry substance is reduced by pounding, grinding, or triturating, or into which it falls by decay; dust. grind their bones to powder small.

2. an explosive mixture used in gunnery, blasting, etc.; gunpowder. see gunpowder.

---

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---

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powder post

dover`s powder

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 **JM Welsh <=> English Dictionary**

**Deintlwch** = n. tooth powder

**Ffylor** = n. dust, powder

**Llwch** = n. dust, or powder

**Meilon** = n. powder, flour

**Peillion** = n. fine flour, powder

**Pylor** = n. dust, powder

**Pyloru** = v. to powder

**Pyloryn** = n. a grain of powder



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To see powder in your dreams, denotes unscrupulous people are dealing with you. You may detect them through watchfulness.

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pulvis

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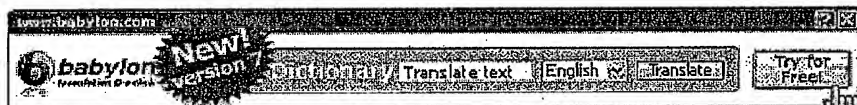
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Powder may refer to a number of topics, including:

- [Powder](#) material composed of very fine particles that are not cemented together
- [Powder \(film\)](#), a 1995 film
- [Powder \(band\)](#), a mid-1990s Britpop band.
- [Powder](#) (doom metal band), a Filipino [doom metal](#) band formed by composer and songwriter [Nephi Malit](#)
- [Powder](#) (book), a 2000 book by Kevin Sampson
- [Powder blue](#), a color
- [Powder](#), a song from the soundtrack of [Cowboy Bebop: Knockin' on Heaven's Door](#)
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### powder

Entries 1 to 10 of 23. Next 10

On Of

<sup>1</sup>powder (verb)

<sup>2</sup>powder (noun)

Powder

baking powder

Main Entry: <sup>2</sup>powder

Function: *noun*

Usage: *often attributive*

Etymology: Middle English *poudre*, from Anglo-French *pudre*, *podre*, from L *pulver-*, *pulvis* dust; probably akin to Sanskrit *palāva* chaff

Date: 14th century

**1** : matter in a finely divided state : particulate matter

**2 a** : a preparation in the form of fine particles especially for medicinal or cosmetic use **b** : fine dry light snow

**3** : any of various solid explosives used chiefly in gunnery and blasting

— **pow-der-less** \-ləs\ *adjective*

— **pow-der-like** \-,lɪk\ *adjective*

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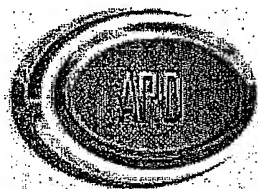
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Merriam-Webster Online. 24 March 2009  
<<http://www.merriam-webster.com/dictionary/powder>>

**APA Style**

powder. (2009). In *Merriam-Webster Online Dictionary*.  
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## Powder<sup>1</sup>

**Definition:** The fine particles to which any dry substance is reduced by pounding, grinding, or triturating, or into which it falls by decay; dust.

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## Powder<sup>2</sup>

**Definition:** An explosive mixture used in gunnery, blasting, etc.; gunpowder. See Gunpowder.

## Powder<sup>3</sup>

**Definition:** To reduce to fine particles; to pound, grind, or rub into a powder; to comminute; to pulverize; to triturate.

## Powder<sup>4</sup>

**Definition:** To sprinkle with powder, or as with powder; to be sprinkle; as, to powder the hair.

## Powder<sup>5</sup>

**Definition:** To sprinkle with salt; to corn, as meat.

## **Powder**<sup>6</sup>

**Definition:** To be reduced to powder; to become like powder; as, some salts powder easily.

## **Powder**<sup>7</sup>

**Definition:** To use powder on the hair or skin; as, she paints and powders.

## **powder**<sup>8</sup>

**Definition:** any of various cosmetic or medical preparations dispensed in the form of a powder

## **powder**<sup>9</sup>

**Definition:** a solid substance in the form of tiny loose particles; a solid that has been pulverized

## **powder**<sup>10</sup>

**Definition:** a mixture of potassium nitrate, charcoal, and sulfur in a 75:15:10 ratio which is used in gunnery, time fuses, and fireworks

## **powder**<sup>11</sup>

**Definition:** apply powder to; "She powdered her nose"; "The King wears a powdered wig"

## **powder**<sup>12</sup>

**Definition:** make into a powder by breaking up or cause to become dust; "pulverize the grains"

# EXHIBIT 6

powder - definition of powder by the Free Online Dictionary, Thesaurus and Encyclop... Page 1 of 4



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**pow·der** (pou'dər)  
*n.*

1. A substance consisting of ground, pulverized, or otherwise finely dispersed solid particles.
2. Any of various preparations in the form of powder, as certain cosmetics and medicines.
3. An explosive mixture, such as gunpowder.
4. Light dry snow.

*v.* **pow·dered, pow·der-ing, pow·ders**

*v.tr.*

1. To reduce to powder; pulverize.
2. To dust or cover with or as if with powder.
3. *Slang* To defeat handily or decisively.

*v.intr.*

1. To become pulverized; turn into powder.
2. To use powder as a cosmetic.

## Idioms:

**keep (one's) powder dry**

To be ready for a challenge with little warning.

**take a powder**

To make a quick departure; run away.

[Middle English poudre, from Old French, from Latin pulvis, pulver-.]

**pow' der-er** *n.*

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## powder

*Noun*

1. a substance in the form of tiny loose particles
2. a medicine or cosmetic in this form

*Verb*

to cover or sprinkle with powder [Old French *poudre*, from Latin *pulvis* dust]

**powdery** *adj*

Collins Essential English Dictionary 2nd Edition 2006 © HarperCollins Publishers 2004, 2006

## Thesaurus

Legend: **S** Synonyms **R** Related Words **A** Antonyms



**Noun 1. powder** - a solid substance in the form of tiny loose particles; a solid that has been pulverized

pulverisation, pulverization

solid - matter that is solid at room temperature and pressure



**2. powder** - a mixture of potassium nitrate, charcoal, and sulfur in a 75:15:10 ratio which is used in gunnery, time fuses, and fireworks

gunpowder



explosive - a chemical substance that undergoes a rapid chemical change (with the production of gas) on being heated or struck

**3. powder** - any of various cosmetic or medical preparations dispensed in the form of a pulverized powder

araroba, chrysarobin, Goa powder - a bitter yellow powder used to treat skin diseases

aspirin powder, headache powder - a powdered form of aspirin

baby powder - powder used to prevent a baby's diaper from chafing

Dover's powder - a medicinal powder made essentially of ipecac and opium; formerly used to relieve pain and induce perspiration

face powder - cosmetic powder for the face

medicament, medication, medicinal drug, medicine - (medicine) something that treats or prevents or alleviates the symptoms of disease

bath powder, dusting powder, toilet powder - a fine powder for spreading on the body (as after bathing)

toilet articles, toiletry - artifacts used in making your toilet (washing and taking care of your body)

**Verb 1. powder** - make into a powder by breaking up or cause to become dust; "pulverize the grains"

pulverize, powderise, powderize, pulverise

powderise, powderize, pulverise, pulverize - become powder or dust; "When it was blown up, the building powdered"

disintegrate - break into parts or components or lose cohesion or unity; "The material disintegrated"; "the group disintegrated after the leader died"

**2. powder** - apply powder to; "She powdered her nose"; "The King wears a powdered wig"

make up - apply make-up or cosmetics to one's face to appear prettier; "She makes herself up every morning"

talc - apply talcum powder to (one's body)

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## powder

**noun 1.** DUST, pounce (rare) talc, fine grains, loose particles

**verb 2.** DUST, cover, scatter, sprinkle, strew, dredge

**verb 3.** GRIND, crush, pound, pestle, pulverize, granulate

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## Translations

Select a language: \_\_\_\_\_

### powder

*n* powder ['paʊdə]

1 any substance in the form of fine particles *soap powder; milk-powder.*

**2** a special kind of substance in this form, used as a cosmetic etc *face-powder*; *talcum powder*.

**3** formerly, gunpowder *powder and shot*.

v

to put powder on (one's face or body) *She powdered her nose*.

**adj powdered**

in the form of fine particles of dust *powdered chocolate*.

**adj powdery**

like powder *powdery soil*.

**powder puff**

a piece of very soft material used to apply face-powder etc.

**n powder room**

a women's restroom.

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## powder

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### powder definition

**pow·der** (pou'dər)

#### *noun*

1. any dry substance in the form of very fine, dustlike particles, produced by crushing, grinding, etc.
2. a specific kind of powder bath powder, face powder
3.
  - a. a drug in the form of powder
  - b. a dose of this
4.
  - a. gunpowder
  - b. Etymology: prob. in reference to swift explosion of powder  
 SLANG a sudden or impulsive rush: obs. or Brit. dial. except in the slang phrase ☆  
**take a powder**, to run away; leave
5. fine, light, powdery snow, considered best for skiing  
 Etymology: ME *poudre* < OFr < L *pulvis* (gen. *pulveris*), dust: see pollen

#### *transitive verb*

1. to sprinkle or cover with or as with powder
2. to apply cosmetic powder to (the body, face, etc.)
3. to make into powder; pulverize

#### *intransitive verb*

1. to be made into powder
2. to use powder as a cosmetic

#### Related Forms:

- powderer pow'-derer *noun*

---

### powder idioms

#### keep one's powder dry

Etymology: in reference to gunpowder

SLANG to be ready for action

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### powder synonyms

## powder

*n.*

particles, film, pulverulence, powderiness, explosive powder, medicinal powder, cosmetic powder; see also cosmetic, explosive, medicine 2.

### keep one's powder dry\*

be ready, be prepared, alert oneself; see prepare 1.

### take a powder\*

run away, abandon, desert; see leave 1.

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## powder usage examples

### *converse of object*

- curry: You could also try this recipe with oily fish like salmon or tuna, with a little more curry powder to spice things up.

### *adjective modifier*

- crystalline: The most popular form of coke is a white crystalline powder.

### *modifies a noun*

- diffraction: A detailed section on powder diffraction is also provided, along with a PDF file with slightly different content to the online notes.

### *noun used with modifier*

- talcum: Pour talcum powder onto the stain, leave overnight.

### more usage examples

The word usage examples above have been gathered from various sources to reflect current and historical usage. They do not represent the opinions of YourDictionary.com.

---

## powder quotes

Our name for problems is significant. We call them headaches. You take a powder and they are gone.

-Acheson, Dean Gooderham

Put your trust in God, my boys, and keep your powder dry. See Forgy 330:25.

-Blacker, Valentine

A ship is always referred to as 'she' because it costs so much to keep her in paint and powder.

-Nimitz, Admiral Chester (William)

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# Calcium Carbonate

## 1. Nonproprietary Names

BP: Calcium carbonate

JP: Calcium carbonate

PhEur: Calcii carbonas

USP: Calcium carbonate; carbonic acid, calcium salt (1:1); calcium carbonate (1:1).

## 2. Synonyms

*Cal-Carb*; creta preparada; E170; *Millicarb*; *Pharma-Carb*; precipitated calcium carbonate; precipitated carbonate of lime; precipitated chalk; *Sturcal*.

## 3. Chemical Name and CAS Registry Number

Carbonic acid, calcium salt (1:1) [471-34-1]

4. Empirical Formula	Molecular Weight
CaCO <sub>3</sub>	100.09

## 5. Structural Formula

CaCO<sub>3</sub>

## 6. Functional Category

Tablet and capsule diluent; therapeutic agent

## 7. Applications in Pharmaceutical Formulation or Technology

Calcium carbonate, employed as a pharmaceutical excipient, is mainly used in solid-dosage forms as a diluent.<sup>(1-3)</sup> It is also used as a base for medicated dental preparations, and as a buffering and dissolution aid in dispersible tablets.<sup>(4)</sup> Calcium carbonate is used as a bulking agent in tablet sugar-coating processes and as an opacifier in tablet film-coating.<sup>(5)</sup> Calcium carbonate is also used as a food additive and therapeutically as an antacid and calcium supplement.<sup>(6)</sup>

## 8. Description

Calcium carbonate occurs as an odorless and tasteless white powder or crystals.

## 9. Pharmacopeial Specifications

Test	JP	PhEur	USP
Identification	+	+	+
Loss on drying	≤ 1.0%	≤ 2%	≤ 2%
Acid-insoluble substances	≤ 0.2%	—	≤ 0.2%
Substances insoluble in acetic acid	—	≤ 0.2%	—
Fluoride	—	—	≤ 0.005%
Arsenic	≤ 4 ppm	≤ 4 ppm	≤ 3 ppm
Barium	+	+	+

(Continued)

Test	JP	PhEur	USP
Chlorides	—	≤ 330 ppm	—
Lead	—	—	≤ 3 ppm
Iron	—	≤ 200 ppm	≤ 0.1%
Heavy metals	≤ 20 ppm	≤ 20 ppm	≤ 0.002%
Magnesium and alkali (metals) salts	≤ 1.0%	≤ 1.5%	≤ 1.0%
Sulfates	—	≤ 0.25%	—
Mercury	—	—	≤ 0.5 ppm
Assay (dried basis)	98.5%-100.5%	98.0%-100.5%	98.0%-100.5%

## SEM: 1

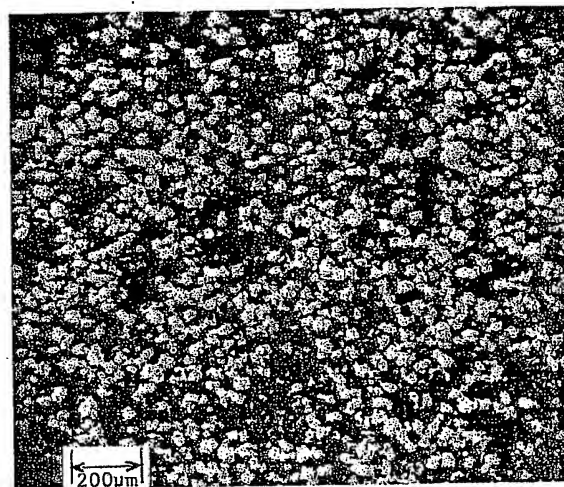
Excipient: Calcium carbonate

Manufacturer: Whittaker, Clark &amp; Daniels

Lot No: 15A-3

Magnification: 600×

Voltage: 20kV



## 10. Typical Properties

Acidity/alkalinity: pH = 9.0 (10%w/v aqueous dispersion)

Compressibility: See Fig. 1.<sup>(a)</sup>Density (bulk): 0.8 g/cm<sup>3</sup>Density (tapped): 1.2 g/cm<sup>3</sup>

Flowability: cohesive

Hardness (Mohs): 3.0 for *Millicarb*

Melting point: decomposes at 825°C

Moisture content: See Fig. 2.<sup>(a)</sup>Particle Size: See Figs. 3<sup>(a)</sup> and 4.<sup>(b)</sup>

Refractive index: 1.59

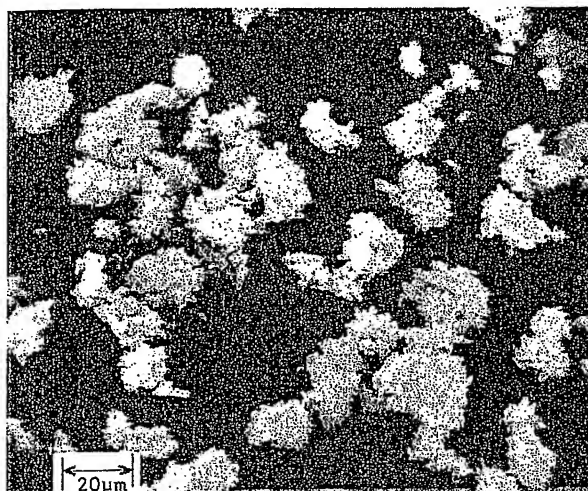
**Solubility:** practically insoluble in ethanol (95%) and water. Solubility in water is increased by the presence of ammonium salts or carbon dioxide. The presence of alkali hydroxides reduces solubility.

Specific gravity: 2.7

Specific surface area: 6.21-6.47 m<sup>2</sup>/g<sup>(b)</sup><sup>(a)</sup> *Handbook of Pharmaceutical Excipients*, First Edition.<sup>(b)</sup> Results of laboratory project for third edition.

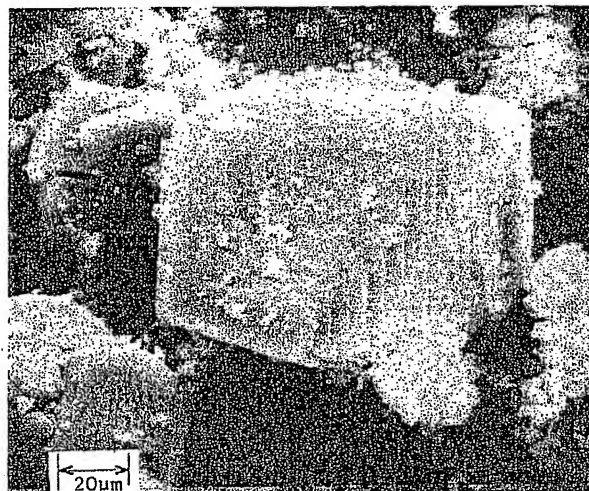
**SEM: 2**

Excipient: Calcium carbonate  
 Manufacturer: Whittaker, Clark & Daniels  
 Lot No: 15A-3  
 Magnification: 2400x  
 Voltage: 20kV



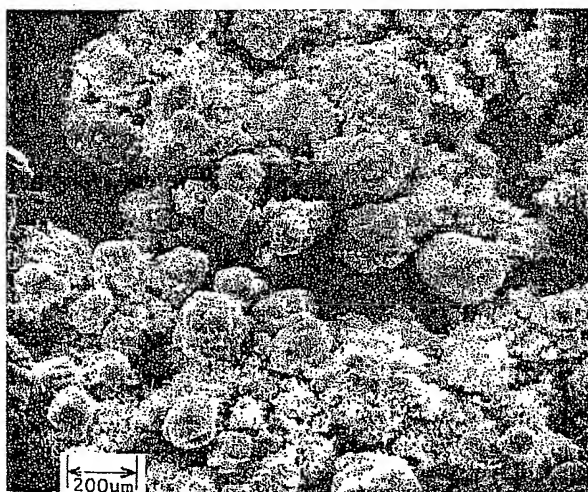
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Excipient: Calcium carbonate  
 Manufacturer: Whittaker, Clark & Daniels  
 Lot No: 15A-4  
 Magnification: 2400x  
 Voltage: 20kV



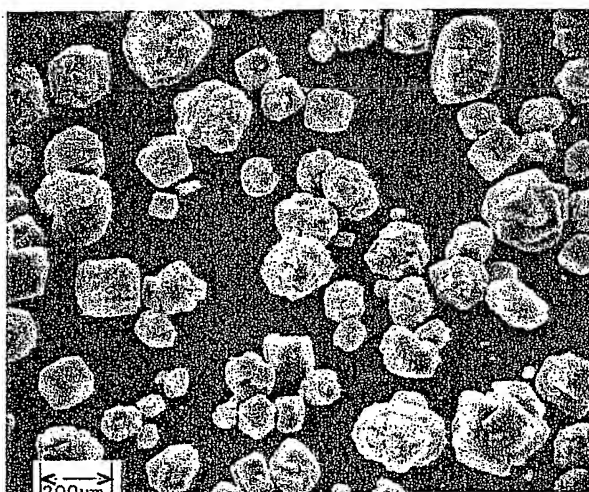
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Excipient: Calcium carbonate  
 Manufacturer: Whittaker, Clark & Daniels  
 Lot No: 15A-4  
 Magnification: 600x  
 Voltage: 20kV



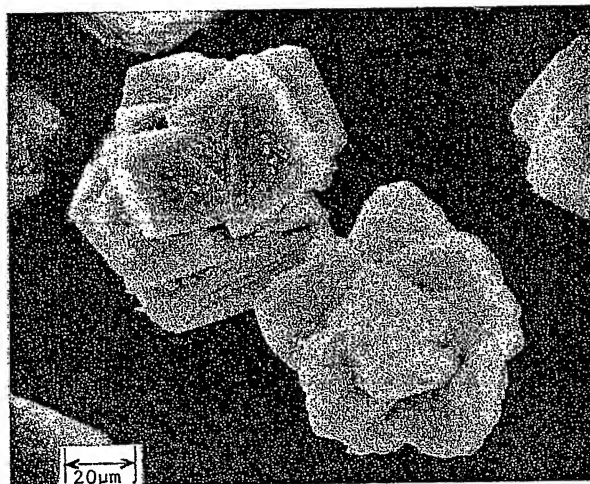
**SEM: 5**

Excipient: Calcium carbonate  
 Manufacturer: Whittaker, Clark & Daniels  
 Lot No: 15A-2  
 Magnification: 600x  
 Voltage: 20kV



**SEM: 6**

Excipient: Calcium carbonate  
 Manufacturer: Whittaker, Clark & Daniels  
 Lot No: 15A-2  
 Magnification: 2400x  
 Voltage: 20kV

**11. Stability and Storage Conditions**

Calcium carbonate is stable and should be stored in a well-closed container in a cool, dry place.

**12. Incompatibilities**

Incompatible with acids and ammonium salts (*see also* Sections 10 and 19).

**13. Method of Manufacture**

Calcium carbonate is prepared by double decomposition of calcium chloride and sodium bicarbonate in aqueous solution. Density and fineness are governed by the concentration of the solutions. Calcium carbonate is also obtained from the naturally occurring minerals aragonite, calcite, and vaterite.

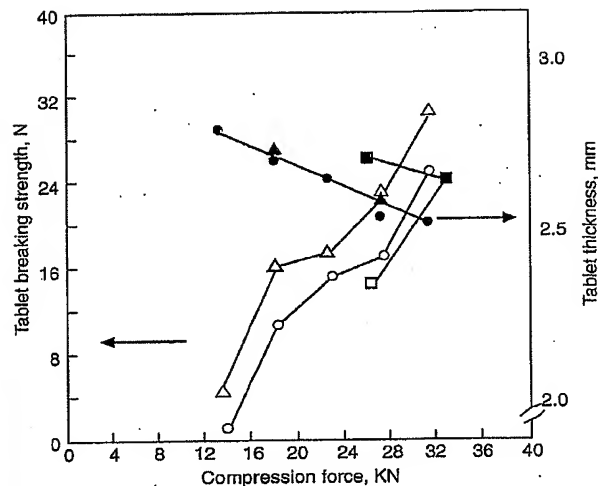
**14. Safety**

Calcium carbonate is mainly used in oral pharmaceutical formulations and is generally regarded as a nontoxic material. However, calcium carbonate administered orally may cause constipation and flatulence. Consumption of large quantities (4-60 g daily) may also result in hypercalcemia or renal impairment.<sup>(7)</sup> Therapeutically, oral doses of up to 1 g are employed as an antacid. Calcium carbonate may interfere with the absorption of other drugs from the gastrointestinal tract if administered concomitantly.

LD<sub>50</sub> (rat: oral) 6.45 g/kg.<sup>(8)</sup>

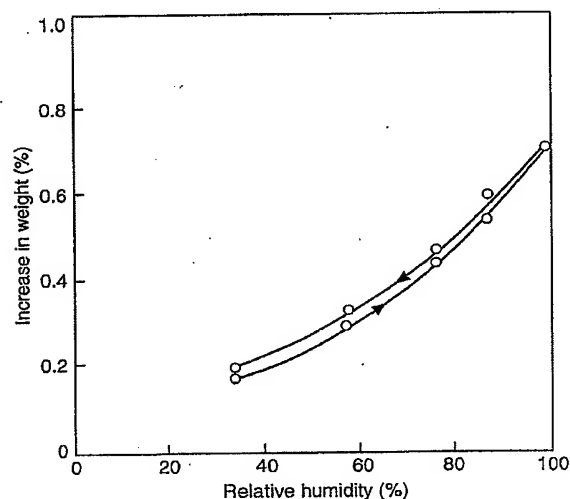
**15. Handling precautions**

Observe normal precautions appropriate to the circumstances and quantity of material handled. Calcium carbonate may be irritant to the eyes and on inhalation. Eye protection, gloves, and a dust mask are recommended. Calcium carbonate should be handled in a well-ventilated environment. In the UK, the



**Fig. 1: Compression characteristics of calcium carbonate.**

○● : Unlubricated, Carver laboratory press  
 △▲ : Lubricated, Carver laboratory press  
 □■ : Lubricated, instrumental Stokes model F-single punch press



**Fig. 2: Moisture sorption-desorption isotherm of calcium carbonate.**

long-term (8-hour TWA) occupational exposure limit for calcium carbonate is 10 mg/m<sup>3</sup>.<sup>(9)</sup>

**16. Regulatory Status**

GRAS listed. Accepted for use as a food additive in Europe. Included in FDA Inactive Ingredients Guide (oral capsules and tablets, and otic solutions). Included in nonparenteral medicines licensed in the UK.

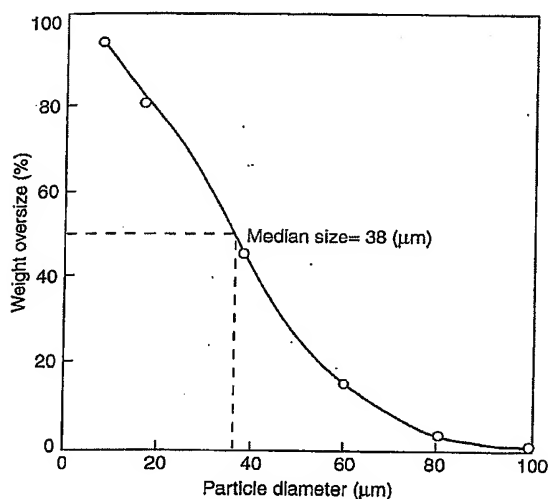


Fig. 3: Particle-size distribution of calcium carbonate.

### 17. Pharmacopeias

Eur, Int, Jpn, Pol, and US.

### 18. Related Substances

Directly compressible tablet diluents containing calcium carbonate and other excipients are commercially available.

### 19. Comments

When used in tablets containing aspirin and related substances, traces of iron may cause discoloration. This may be overcome by inclusion of a suitable chelating agent. Grades with reduced lead levels are commercially available for use in antacids and calcium supplements.

### 20. Specific References

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3. Ejiofor O, Esezbo S, Pilpel N. The plasto-elasticity and compressibility of coated powders and the tensile strength of their tablets. *J Pharm Pharmacol* 1986; 38: 1-7.

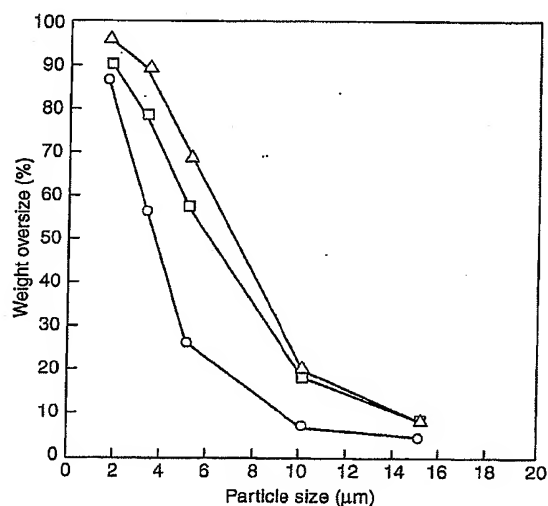


Fig. 4: Particle-size distribution of calcium carbonate. (Sturcal, Rhone-Poulenc Inc.)

○ : Sturcal F  
□ : Sturcal H  
△ : Sturcal L

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### 22. Author

NA Armstrong.